IN THE CLAIMS

Kindly change the claims as shown below.

51. (Currently amended) An apparatus for measuring spectral information of light from at least one object, comprising:

a transparent body having a front side and a back side, the front side including

an entrance surface having at least one entrance aperture for receiving light, and

at least a first front reflecting surface, and

the back side including

at least a first back reflecting surface for reflecting light received from the at least one entrance aperture to the at least one front reflecting surface, and

an exit surface,

at least one of the at least a first front reflecting surface and the at least a first back reflecting surface including a first diffractive optical element, and at least one of the at least a first front reflecting surface and the at least a first back reflecting surface including a first focusing element, the first diffractive element being arranged to ~~receive~~ disperse diverging light received from the at least one entrance aperture; and

a light detector unit arranged to receive the dispersed light through the exit surface from the at least one reflecting surface on the front side.

52. (Previously presented) The apparatus according to claim 51, wherein a light path through the transparent body from the entrance aperture to the exit surface via the first diffractive optical element and the first focusing element is incident on an aberration correcting element.

53. (Previously presented) The apparatus according to claim 52, wherein the first focusing element is an aspheric focusing element, the aspheric focusing element comprising the aberration correcting element.

54. (Previously presented) The apparatus according to claim 52, wherein the aspheric correcting element includes one of a tilted exit surface and an aspheric exit surface.

55. (Previously presented) The apparatus according to claim 51 wherein the front side further includes at least a second front reflecting surface and the back side includes at least a second back reflecting surface, the at least a second front reflecting surface and the at least a second back reflecting being arranged to reflect light propagating from the entrance aperture to the diffractive optical element.

56. (Previously presented) The apparatus according to claim 51, wherein the first diffractive optical element and the light detector unit are arranged in parallel planes.

57. (Previously presented) The apparatus according to claim 51, wherein the entrance surface and the exit surface are parallel.

58. (Previously presented) The apparatus according claim 51, wherein the entrance aperture includes a rectangular slit.

59. (Previously presented) The apparatus according to claim 51, wherein the entrance aperture includes an exit face of an optical fiber.

60. (Previously presented) The apparatus according to claim 51, wherein the diffractive optical element is aspheric.

61. (Previously presented) The apparatus according to claim 51, wherein the light detector unit is positioned at a selected distance from the exit surface of the transparent body.

62. (Previously presented) The apparatus according to claim 51, wherein the transparent body is a unitary body.

63. (Previously presented) The apparatus according to claim 51, wherein the transparent body is a composite, transparent body.

64. (Previously presented) The apparatus according to claim 63 wherein the composite, transparent body includes at least first and second body parts, the first body part including the front side and the second body part including the back side.

65. (Previously presented) The apparatus according to claim 64, further comprising light absorbing material disposed between the first and second body parts.

66. (Previously presented) The apparatus according to claim 65, further comprising at least one intermediate body part between the first and second body parts.

67. (Previously presented) The apparatus according to claim 51, wherein the transparent body is covered by light absorbing material.

68. (Previously presented) The apparatus according to claim 67, wherein the light absorbing material has a refractive index approximately equal to a refractive index of the transparent body.

69. (Previously presented) The apparatus according claim 67, wherein the light absorbing material is coated onto the transparent body.

70. (Previously presented) The apparatus according to claim 67, wherein the light absorbing material is molded into the transparent body.

71. (Previously presented) The apparatus according to claim 51, further comprising at least two spectrometer channel paths between the at least one entrance aperture and the light detector unit.

72. (Previously presented) The apparatus according to claim 71 wherein the at least two spectrometer channel paths are parallel.

73. (Previously presented) The apparatus according to claim 51 further comprising at least one reference light source to illuminate the object.

74. (Previously presented) The apparatus according to claim 73, wherein the at least one reference light source is disposed to illuminate the object in a reflection configuration.

75. (Previously presented) The apparatus according to claim 73 wherein the at least one reference light source is disposed to illuminate the object in a transmission configuration.

76. (Previously presented) The apparatus according to claim 73, wherein the body includes at least one measuring channel for measuring light from the object and a reference channel for measuring light from the at least one reference light source.

77. (Previously presented) The apparatus according to claim 76, further comprising a guiding plate disposed to guide light from the at least one reference light source to the reference channel.

78. (Previously presented) The apparatus according to claim 76, further comprising an optical fiber disposed to guide light from the at least one reference light source to the reference channel.

79. (Previously presented) The apparatus according to claim 76, further comprising an analyzer coupled to receive measurement and reference signals from the light detector unit, the analyzer being arranged to produce an output measurement signal using the measurement and reference signals, a variation of the output measurement signal with reference light spectrum being less than a variation in the measurement signal with reference light spectrum.

80. (Previously presented) The apparatus according to claim 51, further comprising an object distance determining unit having a light spot source for illuminating the object and a distance light detector to detect light from the light spot source reflected by the object.

81. (Previously presented) The apparatus according to claim 80, wherein the light spot source is a substantially monochromatic light source.

82. (Previously presented) The apparatus according to claim 80, wherein the object distance determining unit includes a distance light focusing unit to focus light reflected from the object to the distance light detector.

83. (Previously presented) The apparatus according to claim 82, wherein the distance light focusing unit includes a wavelength bandpass filter allowing passage of light only within a bandwidth of the light spot source.

84. (Previously presented) The apparatus according to claim 80, wherein the distance light detector detects at least one of position and size of a light beam reflected from the object.

85. (Previously presented) The apparatus according to claim 80, wherein the distance light detector is a position sensitive detector or an array detector.

86. (Previously presented) The apparatus according to claim 80 wherein the object distance determining unit includes an analyzer coupled to receive a distance measurement signal from the distance light detector and to generate an object distance value representing a distance between the object and the transparent body.

87. (Currently amended) The apparatus according to claim [87] 86, wherein the analyzer is further coupled to receive spectrum measurement signals from the light detector unit and to modify the spectrum measurement signals based on the object distance value.

88. (Currently amended) An apparatus for measuring spectral information of light from at least one object, comprising:

a transparent body having a front side and a back side, the front side including

an entrance surface having at least one input means for inputting light from the object, and

at least a first front reflecting surface, and

the back side including

at least a first back reflecting surface for reflecting light received from the at least one ~~entrance aperture~~ input means to the at least one front reflecting surface, and

an exit surface,

at least one of the at least a first front reflecting surface and the at least a first back reflecting surface including a first diffracting means for diffracting light, and at least one of the at least a first front surface and the at least a first back reflecting surface including a first focusing means for focusing light, the first diffracting means being arranged to ~~receive~~ disperse diverging light received from the at least one entrance aperture; and

light detecting means for detecting light transmitted out of the exit surface.

89. (Currently amended) A method of measuring spectral information of light from an object, comprising:

inputting signal light from the object to a transparent body through an entrance aperture on a first side of the body;

propagating divergent signal light from the entrance aperture to a diffractive element on a second side of the body;

diffracting the divergent signal light with the diffractive element into separated wavelength components;

reflectively focusing the divergent, separated wavelength components to an exit face using a focusing reflector on ~~the second side of~~ the body; and

detecting the focused, separated wavelength components using a detector unit.

90. (Previously presented) The method as recited in claim 89, further comprising reflecting the divergent signal light from the second side to the first side and back to the second side before the divergent signal light is incident on the diffractive element.

91. (Previously presented) The method as recited in claim 89, further comprising illuminating the object with reference light, reference light propagating from the object to the entrance aperture entering the aperture as the signal light, and reducing spectral influence of the reference light on a spectrum signal generated by the detector unit.

92. (Previously presented) The method as recited in claim 89, further comprising illuminating the object with distance light and determining a distance between the object and a distance detector using distance light reflected by the object.

93. (Previously presented) The method as recited in claim 92, wherein determining the distance between the object and the distance detector includes determining a light spot size or a light spot position.

94. (Previously presented) The method as recited in claim 92, further comprising adjusting a spectrum signal generated by the detector unit in response to the distance determined between the object and the distance detector.